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पोत निर्माण — समुद्री जहाजों के लिए आतिशबाजी द्वारा विपत्ति संकेत

भाग 2 लाल अग्नि पैराशूट संकेत — विशिष्टि

Indian Standard

SHIPBUILDING—PYROTECHNIC DISTRESS SIGNALS FOR SHIPS

PART 2 RED FLARE PARACHUTE SIGNAL — SPECIFICATION

ICS 71.100.30; 47.040; 47.080

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BUREAU OF INDIAN STANDARDS
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

February 1997

Price Group 3

Marine Instruments and Safety Aids Sectional Committee, TED 20

FOREWORD

This Indian Standard (Part 2) was adopted by the Bureau of Indian Standards, after the draft finalized by the Marine Instruments and Safety Aids Sectional Committee had been approved by the Transport Engineering Division Council.

Pyrotechnic distress signals form parts of the lifeboats and liferafts equipment in accordance with *Life Saving Appliances Rules*, 1986 under the *Merchant Shipping Act*, 1958.

Indian Standards covering the whole range of pyrotechnic distress signals are being published in the following parts.

Shipbuilding—Pyrotechnic distress signals for ships:

Part 1	General requirements
Part 3	Red star rocket signal
Part 4	White flare signal
Part 5	White flare parachute signal
Part 6	Explosive shell signal
Part 7	Explosive rocket signal
Part 8	Orange smoke signal
Part 9	Red flare signal

These standards are based on GB 3107.1—3107.9-1982 'Standards of pyrotechnic signals for ships', issued by the China State Bureau of Standard.

The composition of the Committee responsible for the preparation of this standard is given in Annex A

For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test or analysis, shall be rounded off in accordance with IS 2 : 1960 'Rules for rounding off numerical values (*revised*)'. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

Indian Standard

SHIPBUILDING—PYROTECHNIC DISTRESS SIGNALS FOR SHIPS

PART 2 RED FLARE PARACHUTE SIGNAL — SPECIFICATION

1 SCOPE

This standad (Part 2) specifies sizes, materials and tests for red flare parachute signals for use in ships, lifeboats and liferafts, when they are in distress or need help. Its performance conforms to the stipulations of SOLAS convention 1974.

2 REFERENCE

IS 14270 (Part 1) : 1995 'Shipbuilding—Pyrotechnic distress signals for ships : Part 1 General requirements' is necessary adjunct to this standard.

3 TERMINOLOGY

For the purpose of this standard, the definitions given in IS 14270 (Part 1) : 1995 shall apply.

4 FORM AND SIZE

4.1 Red flare parachute signal for ships is the rocket driven flame type pyrotechnic signal, ignited either by pulling or by striking. Its main components include:

a) Rocket launcher and rocket body,
b) Signal chemical sticks,
c) Parachute and accessories,
d) Ignition device,
e) Shell and guiding tube,
f) Connecting item, and
g) Safety cap and top cap.

4.2 The outer diameter of the red flare parachute signal for ship shall not exceed 45 mm, and total length shall not be more than 290 mm. Its total weight shall not exceed 450 g.

5 CONSTRUCTION AND GENERAL REQUIREMENTS

5.1 Red flare parachute signal for ships shall conform to IS 14270 (Part 1) : 1995.

5.2 After the signal is ignited either by pulling or by striking, it shall be ejected into the air using rockets to a height of not less than 300 m, to give out red flare hanging by parachute, its flare shall have:

a) Red flare of strength not less than 30 000 candela;
b) Duration of not less than 40 seconds;
c) Rate of descent shall not be more than 5 m/s;
d) the red flare colour according to the diagram stipulated by International Illumination Committee, Area limit of its chromaticity shall be within the scope of following co-ordinates:

X	0.680	0.660	0.735	0.721
Y	0.320	0.320	0.265	0.259

e) Red flame shall not burn the parachute and accessories.

5.3 Signal chemical stick shall be made of small grains of black chemical, gun powder, ignition chemical, signal chemical, etc, its external diameter shall be 35 to 37 mm. Weight shall not be less than 90 g.

5.4 Parachute body shall be of rectangular or round shape, its size shall conform to the requirements of **4.2**, chute thread shall have sufficient strength, signal sticks shall be hanged to one end by using 300 mm long thin steel wire or chain.

5.5 Rocket launcher is made up of rocket body, gun powder, propellant and outer shell. Outer shell is aluminium tube of outer diameter not less than 38 mm. the diameter of the nozzle of the steel rocket body shall be suitable for the propellant. On the upper surface of the rocket body the signal chemical sticks and parachute signals are placed.

5.6 Ignition device shall conform to the stipulations of **4.1** of IS 14270 (Part 1) : 1995

5.7 Shell and direction tube shall be made of plastic or equivalent material.

5.8 Connecting item be made of plastic or equivalent material with its one end connected to the signal shell and the other to the safety cap.

5.9 Safety cap and the top cap may be made of plastic or metallic material, with its height not more than 25 mm, and outer surface knurled and red in colour. Metal caps shall undergo anticorrosive treatment.

5.10 The outer shape and composition of this signal shall conform to the stipulations of **4.2** of IS 14270 (Part 1) : 1995.

5.11 The signal, in release condition without the safety cap, shall be immersed in 10 cm deep water for five minutes and its utility performance shall not be affected.

5.12 When subjected to a salt spray (20 percent sodium chloride solution) at a temperature of 35± 3°C for at least 100 h the signal shall function effectively.

5.13 The signal while igniting shall not have any blind fire, explosion or mishap. Rocket shall be safe and dependable, its initial thurst shall be proper and the igniting flame shall not burn the hand of the person releasing it.

5.14 The signal, when freely dropped on a steel sheet surface form a height of 3 m, shall not ignite or explode and its utility performance shall not be affected.

5.15 The test for the validity period of the signal shall conform to the stipulations of **6.4** of IS 14270 (Part 1) : 1995.

6 TESTING

6.1 Test methods of the signal shall conform to the stipulations of IS 14270 (Part 1) : 1995.

6.2 Flare Strength and Duration Test

6.2.1 Determination of the flare strength shall be done by using 'ST' type or equivalent lux meter, under the test lab conditions of simulated black body and wind speed of 5 m/s. It shall be started at the 10th minute after igniting, reading values at an interval of 5 seconds and after calculating its average the result shall be arrived at as per the following formula:

$$I = AS^2$$

Where

I = flare strength of the light source, in candela;

A = luminous Intensity of the light source perpendicular to lux-meter; and

S = distance of the lux meter from the light source, m.

6.2.2 Flame duration time shall be determined by stop watch when measuring the flare strength and its duration calculated from starting of the flame till it has died out. During release test also, the flame duration time shall be noted down for comparison.

6.2.3 The flare strength and flame duration of each batch of products is taken separately to calculate the average value of each test samples.

6.3 Flare Chromaticity Test

Flare chromaticity shall be measured by using colorimeter in the flare chromaticity area limit or under the sunlight by the measurement method, using human eyes in which standard red colour sample plates, as per the stipulation in **5.2** of this standard are compared with its colour. This test may be conducted together with the flare strength measurement.

6.4 Launching Height Test

The height of the rocket launched shall be measured at the test field at the time of release on ship, by using height measuring equipment. Its height shall be measured from the launching place to the place where parachute is just stationary hanging red flare.

6.5 Release Test

Release test may be conducted on the special launcher, but at least one signal shall be released by hand.

6.6 Vibration test, low temperature test, high temperature test and general parformance test of the signal shall conform to the stipulation of **5.2**, **5.4**, **5.5** and **5.8** respectively of IS 14270 (Part 1) : 1995.

7 INSPECTION

7.1 Product inspection of the signal shall conform to the stipulations of **6.1** to **6.4** of IS 14270 (Part 1) : 1995.

7.2 Items, scope, sequence and the quantity of selected samples in each group for the delivery inspection of the signal shall conform to the stipulations given in Table 1.

Table 1 Sampling Plan for Inspection
(*Clause* 7.2)

Sl No.	Requirements	Clause Ref	Sample Size
i)	Outer shape of signal chemical sticks and parachutes and their quality	5.2 to 5.4	3 percent of the quantity handed over for inspection from every batch, but not less than 10 numbers
ii)	Outer shape of rocket launcher ignition devices, connecting items, etc, and their quality	5.5 to 5.9	
iii)	External appearance, marks and packings	5.10, 8 and 9	
iv)	Water proof performance	5.11 and 5.12	Not less than 3 pieces from every batch
v)	Release test	5.2, 5.13 and 6.5	May use the test samples after the water proof test
vi)	Validity period test	5.15	

7.3 Items,scope, sequence and the quantity of the selected samples for the demonstration test of the product shall conform to the stipulations given in Table 2.

8 MARKING

8.1 The packing container of every shell and finished goods of the signal products and its shipment packing cases shall conform to the requirements stipulated in **7** of IS 14270 (Part 1) : 1995.

8.2 Operation parameter of the product shall also include the flare strength and duration and the height to which the rocket is launched. It shall not be directed against the person who releases.

9 PACKING

Packing of the signal product shall conform to the stipulations as in **8** of IS 14270 (Part 1) : 1995.

10 STORAGE

Stroage of the signal product shall conform to the stipulations as in **9** of IS 14270 (Part 1) : 1995.

Table 2 Inspection of Selected Sample
(*Clause* 7.3)

Sl No.	Requirements	Clause Ref	Sample Size
i)	Vibration	6.6	Not less than 3 of each items
ii)	Dropping	5.14	
iii)	Low temperature,High temperature	6.6	
iv)	Water proof performance	5.11 and 5.12	
v)	Release test	5.2, 5.12 and 6.5	May use the test samples after the water proof
vi)	General performance	5.8 of IS 14270(Part 1) : 1995	Not less than 12 pieces
vii)	Validity period test	6.4 of IS 14270 (Part 1) : 1995	

ANNEX A

(*Foreword*)

COMMITTEE COMPOSITION

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(*Continued on page 5*)

(*Continued from page* 4)

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